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ABSTRACT

This document is a study of standardized tests by sub-group, ranking the states according to scores divided (in turn) by gender, race and ethnicity, location of school, family income, parental education, teacher qualification and experience, limited English proficiency, special education participation rate, and per-pupil spending. The tests examined are the 1996 National Assessment of Educational Progress (NAEP) mathematics assessments and the 1998 NAEP reading assessments for grades 4 and 8. How much policymakers and the public should rely on standardized tests to determine public policy is an ongoing battle. It is important to acknowledge, as these analyses show, that who a student is and where he or she comes from can be as important, if not more so, than what happens to him or her at school. It is necessary to treat these factors and these differences as obstacles to be overcome, not alibis to be delivered whenever test scores are bad. The analyses in this report provide a new set of rankings to show which states are overcoming obstacles and which are delivering alibis. (Contains 22 tables.) (SLD)

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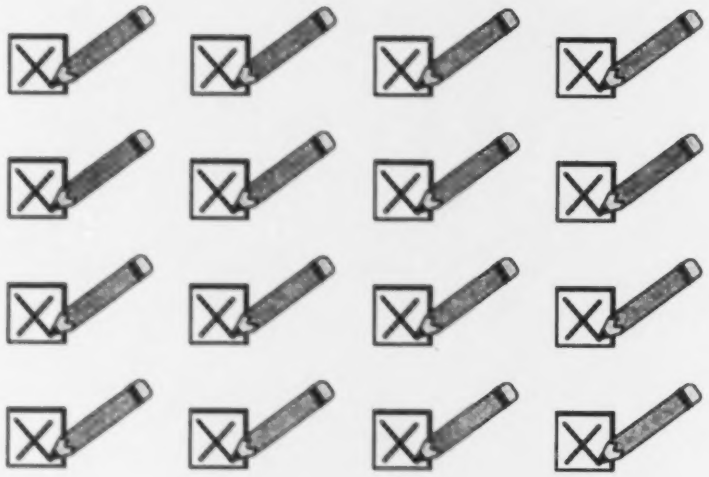
Measure for Measure

A Magnified Look at Standardized Test Scores



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April 1999

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Measure for Measure

A Magnified Look at Standardized Test Scores

by Mike Antonucci

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Think us no churls, nor measure our good minds by this rude place we live in.

— Cymbeline, Act III, Scene VI

Introduction

In March 1998, the Education Intelligence Agency released a report, *One Yard Below: Education Statistics from a Different Angle,* in an attempt to circumvent the usual arguments over education statistics. The report examined per-pupil spending, teacher salaries, non-teacher employment, teacher mobility and demographics, and special education. *One Yard Below* pointed out that there was an unfortunate tendency in public education for people to pick and choose those statistics which coincided with already-held beliefs, and then discard the rest. The study deliberately used unusual formulations, such as "cents spent on benefits for every dollar of salary," "classroom teachers as a percentage of the public education work force," and "per-teacher spending," in the hope that consumers of education statistics would reexamine the basis upon which many of their favorite tables and graphs were created.

Well, in terms of public attention, *One Yard Below* was an amazing success. Daily newspapers and magazines ran stories on it. Talk radio discussed it. State departments of education read it and dissected it. It was distributed by the Thomas B. Fordham Foundation. EIA still receives requests for the report virtually every day.

But even *One Yard Below* was not immune from selective use. The best illustration occurred courtesy of the Pennsylvania State Education Association and the Texas Federation of Teachers. One table in the report ranked states according to how much the salary of the average teacher exceeded the salary of the average worker. The point was not to suggest that the reverse should be true, but to avoid teacher salary rankings that consistently put Northeastern states at the top and Southern states at the bottom — rankings which express more about regional cost of living than about teacher salaries. Rather than deal with cost of living formulas, I hit upon the happy idea of comparing teachers with everyone else within their state — from factory workers to CEOs.

I learned after publication of *One Yard Below* that this idea was not unique. In fact, the American Federation of Teachers used a similar construction in its annual study of education spending. Pennsylvania had the largest teacher-worker "gap" at over 65%, while the District of Columbia and Texas ranked at the bottom.

When Peter Brimelow of *Forbes* used this information in a "Charticle," the Pennsylvania public education establishment erupted. Self-designated defenders of public education assailed the comparison, the report and EIA. Newspapers ran cautionary editorials about comparing teachers with the *hoi polloi*. Carolyn Dumaresq, executive director of the Pennsylvania State Education

Association, claimed the figures were suspect because of my reputed "ties" with groups that want to "privatize education." Dickinson College held a public forum on the report's findings, featuring a PSEA representative holding court with a PowerPoint presentation on how poorly compensated state teachers were. EIA's report was defended by Sean Duffy of the Commonwealth Foundation, a conservative public policy organization.

All well and good, until several months later, when the same table made its way through the public education establishment in Texas. Three researchers, professors from Texas A&M University, testified in front of the Texas House Public Education Committee in an attempt to gain support for an across-the-board pay raise for state teachers. To bolster their case, they used the same teacher-worker table that had been lambasted in Pennsylvania. Not only that, but the Texas Federation of Teachers applauded the use of the statistics in a legislative hotline report to its members. Soon after, EIA received an e-mail from the office of Texas Gov. George Bush. A member of his staff wanted to know where the report's numbers had come from.

I relate this story because the report you are reading is likely to engender the same reactions. We all want to be first in good things and last in bad things. When it comes to something as important as education, no one wants to be at the bottom of the heap. There is a little leeway when it comes to spending and salaries, because not everyone agrees that spending the most money is necessarily a good thing. There is no such leeway on the topic of standardized tests. Love them or hate them, there is no advantage in having low test scores. Whether judged against a mean score, or ranked by state, district or school, the top scorers will boast of their placement and the bottom scorers will either promise improvement, offer alibis, or sulk.

Criticisms of standardized tests abound, but are never offered by those who do well on them. Even when test scores are accepted, there is little agreement on why some states do better than others. Here are just a few of the complaints:

* **Rankings are overemphasized.** Rankings mean little without a thorough examination of the distance between first and last. In his book, "Setting the Record Straight," Dr. Gerald W. Bracey uses a sports analogy, describing how sprinter Michael Marsh finished last in the final heat of the 200-meter dash in the 1996 Summer Olympics. Marsh would have set a new world record had he improved his performance by only 7 percent. "In a list of rankings, someone always ranks last," writes Bracey.[1]

* **Standardized tests discriminate by gender.** Strangely enough, this claim is made on behalf of both girls and boys.

* **Standardized tests discriminate by race and ethnicity.** African-American and Hispanic students consistently score lower on standardized tests than whites and Asian-Americans.

* **Standardized tests discriminate by income.** Rich kids outscore poor kids. Suburban kids outscore inner-city kids.

* **Standardized tests discriminate by parental education level.** Children of college graduates outscore children of high school dropouts.

* **Standardized tests discriminate by student body composition.** States with high concentrations of mainstreamed students with learning disabilities, or states with high concentrations of limited-English proficiency (LEP) students, perform worse on standardized tests.

* **Standardized tests discriminate by participation rate.** Scores are affected by the number of students who choose (or are chosen) to take the test. The more students who test, the lower the average score.

* **Standardized tests discriminate by teacher experience and qualifications.** Students with highly experienced, highly qualified teachers score better than similar students with less experienced, less qualified teachers.

* **Standardized tests discriminate by spending.** High spending states outscore low spending states.

* **Standardized tests measure "standard" thinking.** All the most utilized standardized tests are largely multiple-choice, fill-in-the-blank tests that are scored by machines. This leaves out a great deal of creative, non-standard reasoning skills that cannot be effectively measured by current tests.

The main complaint, then, is that standardized tests measure nothing more than the inequalities of American society. If you're a white, rich suburban kid with college-educated parents in a state-of-the-art school with experienced and qualified teachers, your test scores will reflect it. One researcher has gone so far as to quantify the "background" effect.

Robert Gaudet, senior researcher at the Donahue Institute of the University of Massachusetts, came to the conclusion that 86 percent of the differences in test scores could be accounted for by factors unrelated to school and teaching. Family income, level of parents' education, and single parent households had more than six times the effect on scores than anything the school could do. "Districts that break the cycle are the ones we need to study," said Gaudet.[2]

Others disagree strongly. In an editorial in the *Wall Street Journal*, Chester E. Finn Jr. and Michael J. Petrilli criticized such thinking as "demographic determinism." They wrote: "If accountability means anything, it is that the education system must strive to erase the effects of race, poverty and family circumstances, not treat them as forces of predestination."[3]

These two positions are not mutually exclusive. Believing that poverty, minority status and inner city residence determine success or failure is a self-fulfilling theory if it is held by those who run the public schools. On the other hand, it is impossible to turn a blind eye to those factors unrelated to school that shape a student's performance. When the white 4th grade students in Hawaii, who

have the worst 1998 NAEP reading scores among white students in the nation, still outscore black students in every jurisdiction but one — Department of Defense Dependent Schools — we have to conclude that something is wrong beyond the curriculum or structure or location of American public schools.

In *Forbes*, Dan Seligman phrased the question this way: "In holding schools accountable for their students' achievement, should we make some kind of 'adjustment' to reflect student background? Nobody has a good answer to that question. If you make the adjustment, you are in effect saying that you expect certain kinds of kids to do poorly on the test — which nobody wants to say. But if you don't make some kind of adjustment, you are plainly being unfair to a lot of teachers and principals. So what happens?"[4]

The source of Mr. Seligman's distress is the knowledge that there are few allowances for individual demographics when it comes to performing in the real world. If you are designing buildings, choosing stocks, selling insurance, fixing automobiles, or landing a jet on an aircraft carrier, you don't get extra credit for having been born in the inner city to parents who dropped out of high school. Clearly, the world of employment has standards that are far less forgiving than the world of school.

But what's wrong with holding all students to the same fair and objective standards, setting the same goal of excellence for all of them, AND taking account of the factors over which neither the students nor the schools have any control?

It would be hubris of the worst sort to attempt to prescribe solutions for the gaps between rich and poor, white and black, suburban and urban, traditional family and single-parent family, etc. But instead of simply decrying these gaps, why not rank states by how well they are closing them? Which state gets the best from low-income students? Which state has the highest scoring minority students?

This is not an attempt to hold poor kids to different standards than rich kids, or females to different standards than males. Closing gaps between sub-groups is not an end in itself, because such an end is easily achieved. All it would take are measures to discourage higher scores. If everyone does poorly, you have eliminated the gaps and achieved equality, but at the cost of excellence. A few superior performers, wherever they come from, are better than none.

If the goal then is to close the gaps by raising the low scores, we must examine the places where that is happening. And we can't do that unless we know where those places are.

Measure for Measure is a study of standardized tests by sub-group, ranking the states according to scores divided (in turn) by gender, race and ethnicity, location of school, family income, parental education, teacher qualification and experience, limited English proficiency, special education, participation rate and per-pupil spending.

The tests we will look at are the 1996 NAEP Mathematics Assessments for 4th and 8th grades, and the just-released 1998 NAEP Reading Assessments for 4th and 8th grades. These tests encompass the greatest number of states. However, not all states are covered by all these tests for all years.

We'll begin by providing the state rankings on average scores for each of these tests. These are the rankings you likely have seen in your newspapers:

Table 1. State Rankings: 1996 NAEP Grade 4 Mathematics Assessment
(Derived from Table 1.1 — The Nation's Report Card, 1996 State Assessment, U.S Department of Education, National Center for Education Statistics)

U.S. 222

1)	Connecticut	232		Oregon	223
	Maine	232		Virginia	223
	Minnesota	232		West Virginia	223
4)	North Dakota	231		Wyoming	223
	Wisconsin	231	27)	Maryland	221
6)	Indiana	229	28)	Kentucky	220
	Iowa	229		Rhode Island	220
	Massachusetts	229	30)	Tennessee	219
	Texas	229	31)	Arizona	218
10)	Montana	228		Nevada	218
	Nebraska	228	33)	Arkansas	216
12)	New Jersey	227		Florida	216
	Utah	227	35)	Delaware	215
14)	Colorado	226		Georgia	215
	Michigan	226		Hawaii	215
	Pennsylvania	226	38)	New Mexico	214
17)	Missouri	225	39)	South Carolina	213
	Vermont	225	40)	Alabama	212
	Washington	225	41)	California	209
20)	Alaska	224		Louisiana	209
	North Carolina	224	43)	Mississippi	208
22)	New York	223	44)	DC	187

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Table 2. State Rankings: 1996 NAEP Grade 8 Mathematics Assessment
(Derived from Table 1.4 — The Nation's Report Card, 1996 State Assessment, US Department of Education, National Center for Education Statistics)

U.S. 271

1)	Iowa	284		Texas	270
	Maine	284		Virginia	270
	Minnesota	284	24)	Rhode Island	269
	North Dakota	284	25)	Arizona	268
5)	Montana	283		North Carolina	268
	Nebraska	283	27)	Delaware	267
	Wisconsin	283		Kentucky	267
8)	Connecticut	280	29)	West Virginia	265
9)	Vermont	279	30)	Florida	264
10)	Alaska	278	31)	California	263
	Massachusetts	278		Tennessee	263
12)	Michigan	277	33)	Arkansas	262
	Utah	277		Georgia	262
14)	Colorado	276		Hawaii	262
	Indiana	276		New Mexico	262
	Oregon	276	37)	South Carolina	261
	Washington	276	38)	Alabama	257
18)	Wyoming	275	39)	Louisiana	252
19)	Missouri	273	40)	Mississippi	250
20)	Maryland	270	41)	DC	233
	New York	270			

Table 3. State Rankings: 1998 NAEP Grade 4 Reading Assessment
(Derived from Summary Data Tables, pages 1-4 — The Nation's Report Card, 1998 State Assessment, U.S Department of Education, National Center for Education Statistics)

U.S. 215

1)	Connecticut	232		New York	216
2)	Montana	226		West Virginia	216
	New Hampshire	226	23)	Maryland	215
4)	Maine	225		Utah	215
	Massachusetts	225	25)	Oregon	214
6)	Wisconsin	224	26)	Delaware	212
7)	Iowa	223		Tennessee	212
8)	Colorado	222	28)	Alabama	211
	Kansas	222	29)	Georgia	210
	Minnesota	222		South Carolina	210
11)	Oklahoma	220	31)	Arkansas	209
12)	Wyoming	219	32)	Nevada	208
13)	Kentucky	218	33)	Arizona	207
	Rhode Island	218		Florida	207
	Virginia	218	35)	New Mexico	206
16)	Michigan	217	36)	Louisiana	204
	North Carolina	217		Mississippi	204
	Texas	217	38)	California	202
	Washington	217	39)	Hawaii	200
20)	Missouri	216	40)	DC	182

Table 4. State Rankings: 1998 NAEP Grade 8 Reading Assessment
(Derived from Summary Data Tables, pages 1-2 — The Nation's Report Card: 1998 State Assessment, U.S. Department of Education, National Center for Education Statistics)

U.S. 261

1)	Maine	273		Texas	262
2)	Connecticut	272		West Virginia	262
3)	Montana	270		Wyoming	262
4)	Massachusetts	269	23)	Arizona	261
5)	Kansas	268	24)	Tennessee	259
6)	Minnesota	267	25)	New Mexico	258
7)	New York	266	26)	Georgia	257
	Oregon	266		Nevada	257
	Virginia	266	28)	Arkansas	256
	Wisconsin	266		Delaware	256
11)	Oklahoma	265	30)	Alabama	255
	Utah	265		South Carolina	255
	Washington	265	32)	California	253
14)	Colorado	264		Florida	253
	North Carolina	264	34)	Louisiana	252
16)	Missouri	263	35)	Mississippi	251
17)	Kentucky	262	36)	Hawaii	250
	Maryland	262	37)	DC	236
	Rhode Island	262			

Table 5 is a cumulative ranking of scores from Tables 1-4. States that did not participate in all four NAEP tests are removed from this list. The four scores are added together to give a cumulative result by which the states are ranked. Table 5 will be useful as a reference when examining the rest of the tables in *Measure for Measure*, allowing the reader to see how various factors affect a state's scores and rankings. Please be aware: the states that do not appear still affect the national averages.

Table 5. State Rankings: Cumulative Test Scores
(Derived from Summary Data Tables — The Nation's Report Card, 1996 & 1998 State Assessments, US Department of Education, National Center for Education Statistics)

	State	Cumulative Score	Grade 4 Math	Grade 4 Reading	Grade 8 Math	Grade 8 Reading
	US	**969**	**222**	**215**	**271**	**261**
1)	Connecticut	1016	232	232	280	272
2)	Maine	1014	232	225	284	273
3)	Montana	1007	228	226	283	270
4)	Minnesota	1005	232	222	284	267
5)	Wisconsin	1004	231	224	283	266
6)	Massachusetts	1001	229	225	278	269
7)	Colorado	988	226	222	276	264
8)	Utah	984	227	215	277	265
9)	Washington	983	225	217	276	265
10)	Oregon	979	223	214	276	266
	Wyoming	979	223	219	275	262
12)	Texas	978	229	217	270	262
13)	Missouri	977	225	216	273	263
	Virginia	977	223	218	270	266
15)	New York	975	223	216	270	266
16)	North Carolina	973	224	217	268	264
17)	Rhode Island	969	220	218	269	262
18)	Maryland	968	221	215	270	262
19)	Kentucky	967	220	218	267	262
20)	West Virginia	966	223	216	265	262
21)	Arizona	954	218	207	268	261
22)	Tennessee	953	219	212	263	259
23)	Delaware	950	215	212	267	256
24)	Georgia	944	215	210	262	257
25)	Arkansas	943	216	209	262	256
26)	Florida	940	216	207	264	253
	New Mexico	940	214	206	262	258
28)	South Carolina	939	213	210	261	255
29)	Alabama	935	212	211	257	255
30)	California	927	209	202	263	253
	Hawaii	927	215	200	262	250
32)	Louisiana	917	209	204	252	252
33)	Mississippi	913	208	204	250	251
34)	DC	838	187	182	233	236

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Measure for Measure contains no trend analysis. That is, there are no comparisons between 1994 scores and 1998 scores. Tables are uniform in appearance, so use caution when reading them. It is easy to confuse 4th grade math scores from 1996 with 8th grade reading scores from 1998. The tables are designed to be user-friendly, but the accompanying analysis will help highlight which states had significant shifts in ranking with each sub-group.

As always, should you have any questions about the statistics or analysis in this report, please feel free to ask. All the contact numbers for EIA are listed on the back cover of this report.

[1] Gerald W. Bracey, *Setting the Record Straight: Responses to Misconceptions About Public Education in the United States* (Alexandria, Virginia: Association for Supervision and Curriculum Development, 1997), p. 78.

[2] "Analysis finds demographics have big effect on student scores," Associated Press, January 14, 1999.

[3] Chester E. Finn Jr. and Michael J. Petrilli, "Education Ratings Employ Rank Double Standards," *The Wall Street Journal*, January 18, 1999.

[4] Dan Seligman, "Can you trust the test scores?" *Forbes*, March 22, 1999, p. 74.

Gender

The tables in this chapter examine the gap in scores between males and females for each state that participated in the NAEP tests. The tables use a coding system. For example, if males outscored females by three points on a particular test in a particular state, that would be coded as M3. If females outscored males by the same margin, it would be coded as F3. We will look in turn at 4th grade math, 4th grade reading, 8th grade math, and 8th grade reading.

Table G-1. Gap in Scores Between Males and Females
(Derived from Table 2.1 — The Nation's Report Card, 1996 Grade 4 Mathematics Assessment, U.S Department of Education, National Center for Education Statistics)

Ex. On average, U.S. males score 3 points higher than U.S. females, annotated as M3.

No Gap	*1 Point Gap*	*2 Point Gap*	*3 Point Gap*	*>3 Point Gap*
Alabama	Arizona M1	Iowa M2	Colorado M3	Connecticut M4
Alaska	Delaware M1	Maryland M2	Indiana M3	California M4
Arkansas	Georgia M1	Massachusetts M2	Maine M3	Nevada M4
DC	Missouri M1	Michigan M2	Minnesota M3	Rhode Island M5
Hawaii	Nebraska M1	New Mexico M2	Montana M3	New Jersey M8
Kentucky	Oregon M1	New York M2	Utah M3	
North Carolina	Pennsylvania M1	North Dakota M2	Virginia M3	
	South Carolina M1	Tennessee M2	Wisconsin M3	
	Texas M1	Vermont M2		
	West Virginia M1	Washington M2		
	Wyoming M1			
		Florida F2		
	Louisiana F1			
	Mississippi F1			

Ever since the controversy about the talking Barbie doll that said "Math class is hard!" we have been concerned about gender differences in math scores. We can see from this data that 4th grade boys already have an edge in math performance, albeit very slight. The only states that can be considered unusual are Mississippi, Louisiana and Florida, where 4th grade girls outscored boys, and New Jersey and Rhode Island, where 4th grade boys significantly outscored girls.

Table G-2. Gap in Scores Between Males and Females
(Derived from Summary Data Tables, pages 11-20 –
The Nation's Report Card, 1998 Grade 4 Reading Assessment,
U.S Department of Education, National Center for Education Statistics)

Ex. On average, U.S. females score 6 points higher than U.S. males, annotated as F6.

Gap 6 Points or Less	*Gap 7-8 Points*	*Gap >8 Points*
Oklahoma F1	Colorado F7	DC F9
Rhode Island F3	Georgia F7	Florida F9
Kentucky F4	Kansas F7	Michigan F9
New York F4	Maine F7	Virginia F9
Wisconsin F4	Mississippi F7	Iowa F10
Connecticut F5	Nevada F7	Louisiana F10
Alabama F6	New Hampshire F7	Montana F10
Arkansas F6	New Mexico F7	Washington F10
West Virginia F6	North Carolina F7	Arizona F11
	South Carolina F7	Hawaii F11
	Tennessee F7	Missouri F11
	Utah F7	Maryland F12
	Wyoming F7	
	California F8	
	Delaware F8	
	Massachusetts F8	
	Minnesota F8	
	Oregon F8	
	Texas F8	

As you can see, females are well ahead of males in reading by the 4th grade. Taking both tables together, we can see relative to the national picture that the most "uneven" results occur in Rhode Island, where 4th grade males do much better than expected relative to females, and in Louisiana and Florida, where 4th grade females outperform males in both math and reading.

Let's move ahead four grades to see what effect it has on the gap. For ease of comparison, the states are listed alphabetically and the gaps from Tables G-1 and G-2 are provided in parentheses for each state in Tables G-3 and G-4 respectively.

Table G-3. Gap in Scores Between Males and Females
(Derived from Tables 2.7 — The Nation's Report Card.
1996 Grade 8 Mathematics Assessment.
U.S Department of Education. National Center for Education Statistics).

Ex. On average, U.S. females score 1 point higher than U.S. males, annotated as F1.

Alabama M1 (0)	Mississippi M1 (F1)
Alaska F1 (0)	Missouri M1 (M1)
Arizona M6 (M1)	Montana 0 (M3)
Arkansas F1 (0)	Nebraska M1 (M1)
California M3 (M4)	New Mexico 0 (M2)
Colorado M4 (M3)	New York M3 (M2)
Connecticut M1 (M4)	North Carolina M4 (0)
Delaware M4 (M1)	North Dakota M1 (M2)
DC F4 (0)	Oregon F1 (M1)
Florida M3 (F2)	Rhode Island M4 (M5)
Georgia F1 (M1)	South Carolina M3 (M1)
Hawaii F7 (0)	Tennessee 0 (M2)
Indiana M1 (M3)	Texas M5 (M1)
Iowa F2 (M2)	Utah M3 (M3)
Kentucky M1 (0)	Vermont M3 (M2)
Louisiana F1 (F1)	Virginia M6 (M3)
Maine M2 (M3)	Washington F1 (M2)
Maryland M2 (M2)	West Virginia F2 (M1)
Massachusetts M1 (M2)	Wisconsin M1 (M3)
Michigan M4 (M2)	Wyoming M2 (M1)
Minnesota M2 (M3)	

Nationally, as girls moved from 4th to 8th grades, their math scores improved relative to boys and eventually surpass them by a margin of one point. Please note, however, that these are not the

same students tested four years apart. Most states show slight movement in one direction or the another, but nothing statistically significant. However, six states and the District of Columbia showed a large difference between their 4th grade math scores and their 8th grade math scores. Arizona Florida, North Carolina and Texas all showed boys gaining ground in math between 4th and 8th grades, while DC, Hawaii and Iowa saw a swing in the opposite direction.

Table G-4. Gap in Scores Between Males and Females
(Derived from Summary Data Tables, pages 4-6 – The Nation's Report Card. 1998 Grade 8 Reading Assessment. U S Department of Education, National Center for Education Statistics)

Ex. On average, U.S. females score 13 points higher than U.S. males, annotated as F13.

Alabama F8 (F6)	Missouri F11 (F11)
Arizona F10 (F11)	Montana F14 (F10)
Arkansas F12 (F6)	Nevada F10 (F7)
California F8 (F8)	New Mexico F11 (F7)
Colorado F13 (F7)	New York F7 (F4)
Connecticut F13 (F5)	North Carolina F14 (F7)
Delaware F13 (F8)	Oklahoma F12 (F1)
DC F12 (F9)	Oregon F14 (F8)
Florida F13 (F9)	Rhode Island F11 (F3)
Georgia F10 (F7)	South Carolina F9 (F7)
Hawaii F13 (F11)	Tennessee F13 (F7)
Kansas F10 (F7)	Texas F10 (F8)
Kentucky F14 (F4)	Utah F9 (F7)
Louisiana F13 (F10)	Virginia F9 (F9)
Maine F15 (F7)	Washington F14 (F10)
Maryland F14 (F12)	West Virginia F15 (F6)
Massachusetts F11 (F8)	Wisconsin F14 (F4)
Minnesota F15 (F8)	Wyoming F15 (F7)
Mississippi F11 (F7)	

The gap in reading scores grew in every state, except Arizona, between 4th and 8th grades. And Arizona's 8th grade girls only lost a single point of its formidable lead over the state's boys. This

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gap may in fact be slightly understated, since boys are excluded from NAEP testing at a rate higher than girls. If all students tested, the low scores of these boys would inflate the gap. We'll discuss this at greater length in the chapter on exclusion rates.

The NAEPs do not provide any information about levels of skill upon school entry, but it is safe to sum up this way. By the time children reach the 4th grade, boys have a slight edge over girls in math, and girls have a somewhat larger edge in reading. In the next four years, girls gain ground relative to boys. The girls achieve a slight edge in math by 8th grade, and a huge edge in reading. But indications from SAT scores suggest that during the high school years, boys reverse the trend. They make up all the lost ground in verbal skills, gaining a minimal lead over girls by 12th grade, and open up a very large lead in math scores. In 1996-97, boys outscored girls by 4 points in the verbal portion of the SAT, and 36 points in math.

What this suggests is the possibility that both sides may be half-correct when they claim the current curricula and classroom practices favor one gender over the other. Or both sides may be completely wrong. Whatever the cause, the tests indicate girls excel in elementary school, while boys excel in high school. While this may be due to simple human physiology, it would be worth comparing the difference in scores and gender gaps between students who are enrolled in single-teacher elementary grade systems through grade 6 (or even 8) and those who are in a middle school or junior high school systems in which they have different teachers for different subjects. Perhaps the switch in systems, whether it occurs at grade 5 or grade 9, tends to favor the learning styles of boys.

Race/Ethnicity

Few things are more likely to cause controversy than the discussion of test scores and academic achievement between the various races and ethnic groups who are served by the American public school system. There isn't a state in the nation without a significant gap in test scores between races. This gap leads to attacks on the tests, attacks on the public school system, attacks on teachers and administrators, and attacks on politicians. Researchers tread carefully through this minefield, walking a line between the extremes of racism and political correctness.

This report isn't interested in that kind of controversy. The numbers don't explain *why* some groups score higher than others. There are people who spend their entire lives trying to figure it out. The reasons for the huge gaps in NAEP scores between whites and Asians on the one hand, and blacks, Hispanics and American Indians on the other, are best left to the sociologists, politicians, community activists and editorialists to puzzle out.

For this report's purposes, let's just admit the gaps are there, then move on to see which states are getting the best scores from their minority students. The temptation is to rank the states according to the size of the gap between white and minority scores — the smaller the gap, the higher the ranking. This is counterproductive. A state with equally low scores for whites and minorities would then outrank a state with higher minority scores, but a larger gap. These tables pretend there are no white or Asian students.

The three tables in this chapter accumulate the scale score on the 1996 NAEP 4th and 8th grade math tests, and the 1998 NAEP 4th and 8th grade reading tests. Table R-1 ranks the states according to their cumulative scores for black students. Table R-2 does the same for Hispanics and Table R-3 for American Indians. The NAEP-testing states not listed here did not have a sufficient sample size for race/ethnicity to be broken out by sub-groups.

Table R-1. State Rankings: Test Scores of Black Students
(Derived from Tables 2.2, 2.8 and Summary Data Tables, pages 21-30 and 7-9 — The Nation's Report Card, 1996 & 1998 State Assessments. U S Department of Education, National Center for Education Statistics)

	US	**876**	**200**	**193**	**242**	**241**
	State	*Cumulative Score*	*Grade 4 Math*	*Grade 4 Reading*	*Grade 8 Math*	*Grade 8 Reading*
1)	Massachusetts	911	208	202	250	251
2)	Texas	903	212	197	249	245
3)	North Carolina	901	205	200	247	249
4)	Virginia	900	204	203	244	249
5)	Connecticut	898	206	205	245	242
6)	Washington	895	203	198	245	249
7)	Colorado	894	196	202	255	241
8)	New York	891	204	193	246	248
9)	Arizona	890	200	190	254	246
10)	Kentucky	889	203	196	248	242
	West Virginia	889	205	192	246	246
12)	Rhode Island	886	194	197	244	251
13)	South Carolina	883	199	197	246	241
14)	Maryland	879	199	195	243	242
15)	Delaware	877	195	199	244	239
16)	Missouri	876	201	190	243	242
17)	Georgia	874	201	193	241	239
18)	Wisconsin	872	201	193	240	238
19)	Minnesota	864	193	190	248	233
	Mississippi	864	197	192	236	239
21)	Tennessee	863	198	193	234	238
22)	California	860	188	189	239	244
23)	Alabama	859	194	193	233	239
24)	Florida	855	195	189	236	235
25)	Louisiana	854	196	186	235	237
26)	Arkansas	849	193	186	235	235
27)	DC	829	184	180	231	234

One thing this table shows is that states at the bottom of the rankings do not discriminate. They do badly for all their students regardless of race. But there is enough movement to prompt us to ask questions about scores in certain states. States like Massachusetts, Texas, Virginia, North Carolina, Arizona and South Carolina may be teaching their black students better than other

statistics might indicate. Also, states like Minnesota and Wisconsin don't seem to carry their black students along in their generally high achievement on NAEP tests.

Table R-2. State Rankings: Test Scores of Hispanic Students
(Derived from Tables 2.2, 2.8 and Summary Data Tables, pages 21-30 and 7-9 — The Nation's Report Card, 1996 & 1998 State Assessments, US Department of Education, National Center for Education Statistics)

	US	**893**	**205**	**195**	**250**	**243**
	State	*Cumulative Score*	*Grade 4 Math*	*Grade 4 Reading*	*Grade 8 Math*	*Grade 8 Reading*
1)	Wisconsin	930	214	208	258	250
2)	Texas	928	216	204	256	252
3)	Virginia	923	214	198	258	253
4)	Minnesota	922	219	203	266	234
5)	Montana	921	209	207	256	249
6)	Connecticut	914	207	205	252	250
7)	Colorado	913	210	202	257	244
8)	Wyoming	912	208	207	256	241
9)	New Mexico	905	205	199	252	249
10)	Utah	904	208	189	256	251
11)	Maryland	903	206	200	248	249
12)	Florida	901	207	200	252	242
13)	Massachusetts	899	211	200	242	246
	Washington	899	208	195	251	245
15)	Oregon	898	201	191	259	247
16)	North Carolina	894	206	196	253	239
17)	New York	893	205	194	245	249
18)	Arizona	885	203	186	251	245
19)	Tennessee	881	208	193	246	234
20)	Georgia	878	202	193	246	237
21)	Delaware	875	194	193	244	244
22)	Hawaii	868	202	183	244	239
23)	California	863	197	181	246	239
24)	Rhode Island	862	201	185	239	237
25)	Alabama	853	196	190	232	235
26)	South Carolina	850	199	189	235	227
27)	Louisiana	849	193	184	242	230
28)	Mississippi	821	196	183	225	217
29)	DC	804	182	168	221	233

If you were to guess beforehand which states you thought might do a good job teaching Hispanic students, Texas might spring to mind, but you probably wouldn't come up with Wisconsin, Virginia and Minnesota as the other three in the top four. About one-third of Texas' students are Hispanic, while the other three states are in the 6-8% range. It also seems strange that Massachusetts and North Carolina, who do relatively well with black students, do much less well with Hispanics. Rhode Island also shows a large drop-off.

Table R-3. State Rankings: Test Scores of American Indian Students
(Derived from Tables 2.2, 2.8 and Summary Data Tables, pages 21-30 and 7-9 — The Nation's Report Card, 1996 & 1998 State Assessments, US Department of Education, National Center for Education Statistics)

	US	**927**	**216**	**200**	**263**	**248**
	State	*Cumulative Score*	*Grade 4 Math*	*Grade 4 Reading*	*Grade 8 Math*	*Grade 8 Reading*
1)	Montana	933	209	209	265	250
2)	Oregon	918	210	197	257	254
3)	Wyoming	910	211	205	250	244
4)	Arizona	900	201	202	254	243
5)	New Mexico	877	197	181	252	247

Only five states that participated in NAEP have American Indian populations large enough to make statistically significant interpretations. But even in these states, the numbers are small enough to dissuade us from any wide-ranging conclusions. Perhaps the most obvious sign is that the northern states appear to do a better job with their American Indian students than do the southern states. This is reinforced by the state of Washington, whose American Indian population was not large enough for a score break-out in the 1998 Grade 8 NAEP Reading test. However, in the other three tests, Washington's American Indian students had the highest 4th grade math, second highest 4th grade reading, and third highest 8th grade math.

Comparing these tables to the rankings of all students in the first chapter may lead us to interpret that states such as Texas and Virginia are performing better than their middle-of-the-pack ranking would indicate. The comparison also tells us that the states with low scores are low for blacks, Hispanics and everyone together... except in one place.

It bears mentioning that white students in Washington, DC, have among the highest scores of *any* sub-group measured by the NAEP. This occurs despite the fact that DC as a whole ranks at the bottom of virtually every test ranking. It doesn't seem unreasonable to ask why the white/minority gap in test scores in our nation's capital is the widest in the entire country. When our

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representatives and federal bureaucrats boast of sending their own children to DC public schools, perhaps we should hold our applause until we determine *which* DC public school they mean. Is it the one the white kids go to, or the schools that the rest of DC residents have to endure? This gap also begs the question about per-pupil spending in the District, which is among the highest in the nation. How equitably is that money distributed from school to school?

Without some sense of which states and school districts are providing minority students with the best education (even if that education is not measuring up to that afforded white students) the money spent to overcome the scoring gap will never be targeted efficiently.

Poverty

It is difficult to argue against the benefits of wealth when it comes to education. We acknowledge it openly in the university system. Our elites attend the Ivy League schools and the poor and middle class, if they attend college, attend state universities and community colleges. Rich families are more likely to have books in the home, computers, Internet access — even simple things like notebooks, pencils and paper. They are more likely to live in the suburbs, where crime is lower. Even their libraries are probably stocked better.

Yet those same libraries are filled with biographies of Americans who overcame poverty to receive a good education and achieve great things. This chapter aims to rank the states where poor students get the richest education. Since there are different measures of poverty, we'll take each in turn in three tables.

Table P-1 accumulates NAEP test scores of those who reside in urban areas. It makes no assumption about their income, but assumes that residence in the inner city is a disadvantage to test scores compared to residence in the suburbs or towns. The National Center for Education Statistics also breaks out scores for students who live in rural areas or small towns. It is more difficult to make a generalization about rural schools. Some suffer from problems as bad or worse than inner city schools. Others, however, remain the bastions of good schooling they have been for 100 years. With no way to split those two classifications, we'll leave rural schools out of the mix.

Table P-2 ranks states by the scores achieved by students in the Title I program. This federal program allocates funds for teachers, aides and supplies to serve students from disadvantaged backgrounds. High participation in the Title I program coincides with high levels of poverty in the areas where it is implemented.

Table P-3 ranks states by the scores achieved by students who are eligible for free or reduced price lunches through another federal program.

Larry Cuban, professor of education at Stanford University, believes vouchers are the solution to the nation's education problems — not school vouchers, housing vouchers. "Because race and social class segregate housing in most places, the federally funded vouchers permit poor parents living in racially isolated slums to choose schools in neighborhoods where their sons and daughters can learn in safe, integrated classrooms with higher academic standards than their neighborhood schools," he wrote.[1] Let's see if he's right.

Table P-1. State Rankings: Test Scores of Urban Students
(Derived from Tables 2.6, 2.12 and Summary Data Tables, pages 48-54 and 14-15
The Nation's Report Card, 1996 & 1998 State Assessments,
U.S Department of Education, National Center for Education Statistics)

	US	**936**	**214**	**208**	**260**	**254**
	State	*Cumulative Score*	*Grade 4 Math*	*Grade 4 Reading*	*Grade 8 Math*	*Grade 8 Reading*
1)	Maine	1023	236	226	282	279
2)	Montana	1003	230	224	286	263
3)	North Carolina	988	227	220	274	267
4)	West Virginia	980	225	223	267	265
5)	Oregon	977	223	211	279	264
6)	Utah	976	225	214	273	264
	Washington	976	225	215	272	264
8)	Colorado	975	223	221	273	258
	Wyoming	975	221	218	273	263
10)	Kentucky	970	221	216	272	261
11)	Wisconsin	968	224	216	272	256
12)	Texas	959	225	209	266	259
13)	Virginia	957	219	215	263	260
14)	Arizona	955	218	208	268	261
	Minnesota	955	222	207	277	249
16)	Hawaii	953	222	210	268	253
	New Mexico	953	217	213	263	260
18)	South Carolina	951	216	214	264	257
19)	Delaware	948	216	212	266	254
20)	Massachusetts	938	216	208	260	254
21)	Connecticut	933	214	209	258	252
	Florida	933	210	208	263	252
23)	Missouri	931	214	198	262	257
24)	Alabama	926	210	208	254	254
	Arkansas	926	212	199	262	253
26)	New York	924	212	203	255	254
27)	Tennessee	922	213	205	251	253
28)	Rhode Island	921	208	202	259	252
29)	Mississippi	911	212	204	252	243
30)	California	905	206	193	257	249
31)	Louisiana	896	204	197	248	247
	Maryland	896	204	199	247	246
33)	Georgia	894	206	196	247	245
34)	DC	838	187	182	233	236

Designation of urban areas doesn't seem to help with comparisons. The urban areas in Maine and Montana are of a different texture than those in DC, California and New York. Percentage of the

state designated as urban area — a statistic which the National Center for Education Statistics provides — isn't the crucial variable either. What does need to be added to this mix is allowance for the *size* of each state's urban areas. This would ensure we were comparing cities like Los Angeles and New York, instead of Los Angeles and Bangor. Within these limitations, however, we can see that states like Oregon, Washington and Colorado are getting more from their urban populations than Tennessee, Rhode Island and Georgia. Location doesn't seem to be quite the indicator of school quality many people believe it to be.

Table P-2. State Rankings: Test Scores of Title I Students
(Derived from Tables 2.4, 2.10 and Summary Data Tables, pages 55-58 and 16-18 — The Nation's Report Card, 1996 & 1998 State Assessments, US Department of Education, National Center for Education Statistics)

	US	**884**	**200**	**197**	**244**	**243**
	State	*Cumulative Score*	*Grade 4 Math*	*Grade 4 Reading*	*Grade 8 Math*	*Grade 8 Reading*
1)	Texas	920	213	207	249	251
2)	Kentucky	919	204	211	246	258
	Maine	919	209	206	257	247
4)	Montana	904	203	200	250	251
	North Carolina	904	200	208	241	255
6)	Massachusetts	901	208	203	246	244
7)	Connecticut	895	207	201	249	238
8)	Minnesota	894	204	195	249	246
9)	Washington	891	202	200	251	238
	West Virginia	891	198	200	243	250
11)	South Carolina	886	199	201	245	241
12)	Wyoming	882	199	197	245	241
13)	Wisconsin	880	200	200	243	237
14)	Missouri	878	203	192	238	245
15)	Arkansas	876	195	196	242	243
16)	Oregon	873	196	195	245	237
17)	Arizona	871	194	184	249	244
18)	Florida	870	198	197	234	241
	Mississippi	870	197	198	236	239
20)	Tennessee	869	196	196	230	247
21)	Louisiana	868	198	193	239	238
22)	Alabama	865	194	198	232	241
23)	New York	864	197	187	237	243
24)	New Mexico	862	196	184	240	242
25)	Rhode Island	861	192	186	237	246
26)	Maryland	855	190	189	228	248
27)	Georgia	851	192	191	230	238
28)	Hawaii	846	183	181	239	243
29)	California	839	186	180	239	234
30)	DC	790	176	172	217	225

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This table may give us a better idea of how to interpret Table P-1. Five of the bottom six states (I exclude Georgia) are more likely to have urban poor that rural poor. The performance of Title I students in Mississippi, Tennessee and Louisiana seems to indicate that if you are poor, you stand a better chance of improving your tests scores away from the large, urban areas.

Table P-3. State Rankings: Test Scores of Students Eligible for Free or Reduced-Price Lunches
(Derived from Tables 2-5, 2-11 and Summary Data Tables, pages 59-62 and 19-21
The Nation's Report Card, 1996 & 1998 State Assessments,
US Department of Education, National Center for Education Statistics)

	US	**903**	**207**	**198**	**252**	**246**
	State	*Cumulative Score*	*Grade 4 Math*	*Grade 4 Reading*	*Grade 8 Math*	*Grade 8 Reading*
1)	Maine	970	221	216	272	261
2)	Montana	958	217	215	266	260
3)	Minnesota	940	218	202	270	250
4)	Utah	938	216	203	268	254
5)	Wyoming	935	213	208	262	252
6)	Wisconsin	932	215	206	262	249
7)	West Virginia	926	213	205	254	254
8)	Massachusetts	920	213	205	254	248
	Missouri	920	210	202	259	249
10)	Oregon	919	210	196	262	251
11)	Colorado	918	210	204	259	245
	Texas	918	215	203	252	248
13)	Washington	917	212	200	258	247
14)	Kentucky	916	209	204	252	251
15)	Connecticut	915	207	205	254	249
16)	North Carolina	910	209	202	250	249
17)	New York	908	206	197	253	252
18)	Virginia	899	206	200	246	247
19)	New Mexico	897	203	194	251	249
20)	Rhode Island	895	204	196	250	245
21)	Tennessee	890	204	198	246	242
22)	Arizona	889	202	188	254	245
23)	Arkansas	888	204	196	246	242
24)	Delaware	884	199	199	247	239
	Florida	884	204	192	248	240
26)	California	883	194	182	246	237
	South Carolina	883	201	196	246	240
28)	Maryland	879	199	195	243	242
29)	Georgia	877	201	193	242	241
30)	Louisiana	876	200	193	241	242
31)	Hawaii	875	202	185	249	239
32)	Mississippi	874	200	195	239	240
33)	Alabama	873	199	196	237	241
34)	DC	806	178	174	226	228

Strangely enough, the order of the rankings changed significantly. Texas, Kentucky, Connecticut and North Carolina dropped. Louisiana, Mississippi and Alabama dropped. But Maine, Minnesota and Wyoming climbed, as did California and Rhode Island. Clearly, whichever measure you use as an indicator of poverty will affect your state's ranking a great deal.

For the years in question, about one-quarter of students are eligible for the Title I program, and about one-third for free or reduced lunch programs. Thus Table P-3 is likely to include virtually all the students from Table P-2 plus the next 5-10% up the income scale. As you can see, those students had a considerable effect on the average test scores.

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[1] Larry Cuban, "Housing, Not School, Vouchers Are Best Remedy for Failing Schools," *Los Angeles Times*, January 31, 1999.

Parents' Education

It is generally accepted that if a child's parents have a good education, they will see to it that their children get one, too. Educated parents produce educated children, who then grow up and produce educated children of their own. However, we must be careful we don't run headlong down this path. Just because educated parents usually provide more educational opportunities for their children, it doesn't necessarily mean that the reverse is true. Parents with little or no formal education may not value it for their children… or they may value it more so. Indeed, a large proportion of an entire generation had little formal schooling because of the Great Depression and World War II. They were forced to go out and earn a living to support themselves and their families. They enlisted and were sent overseas to fight. But this same generation sent their own kids to school, and kept them there, at historically unmatched levels.

That having been said, highly educated parents are clearly an excellent resource for children as they go through school. They can help with homework and are more apt to provide a stimulating academic environment outside of school grounds. This chapter examines two sub-groups of test scores at either end of the parental education spectrum: those of students who have at least one parent who graduated from college, and those of students without a parent who finished high school.

Table PF-1. State Rankings: Test Scores of Students with a College Graduate Parent
(Derived from Tables 2.3, 2.9 and Summary Data Tables, pages 41-44 and 10-12 –
The Nation's Report Card, 1996 & 1998 State Assessments,
US Department of Education, National Center for Education Statistics)

	US	1001	230	218	281	272
	State	*Cumulative Score*	*Grade 4 Math*	*Grade 4 Reading*	*Grade 8 Math*	*Grade 8 Reading*
1)	Connecticut	1049	240	235	292	282
2)	Maine	1045	239	229	295	282
3)	Minnesota	1033	240	224	293	276
4)	Massachusetts	1032	235	229	290	278
5)	Montana	1031	234	228	292	277
	Wisconsin	1031	237	226	292	276
7)	Colorado	1020	234	225	287	274
8)	Oregon	1016	232	220	288	276
9)	Virginia	1014	231	222	284	277
10)	Texas	1012	238	219	283	272
11)	Washington	1011	231	219	287	274
12)	New York	1009	231	219	282	277
	Utah	1009	234	218	284	273
14)	Kentucky	1006	230	221	281	274
	Rhode Island	1006	229	222	282	273
16)	Missouri	1003	232	218	282	271
17)	Wyoming	1001	231	220	283	267
18)	North Carolina	1000	231	217	279	273
19)	West Virginia	999	231	220	276	272
20)	Maryland	998	229	216	281	272
21)	Arizona	991	227	211	281	272
22)	Tennessee	985	228	213	275	269
23)	New Mexico	979	224	210	277	268
24)	Delaware	977	221	211	279	266
25)	Georgia	976	222	210	277	267
26)	California	973	221	208	278	266
27)	South Carolina	967	219	212	272	264
28)	Arkansas	966	220	208	274	264
	Florida	966	220	210	275	261
30)	Alabama	960	217	210	269	264
31)	Hawaii	953	221	199	274	259
32)	Mississippi	934	213	205	257	259
33)	Louisiana	929	211	201	259	258
34)	DC	868	194	181	245	248

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There was no significant difference in ranking between average scores and scores of students with a college graduate parent. Wyoming fell and Kentucky rose. All other states remained within three or four spots of their normal ranking.

Table PF-2. State Rankings: Test Scores of Students without a High School Graduate Parent
(Derived from Tables 2.3, 2.9 and Summary Data Tables, pages 41-44 and 10-12 –
The Nation's Report Card, 1996 & 1998 State Assessments,
U.S Department of Education, National Center for Education Statistics)

	US	**898**	**205**	**197**	**254**	**242**
	State	*Cumulative Score*	*Grade 4 Math*	*Grade 4 Reading*	*Grade 8 Math*	*Grade 8 Reading*
1)	Texas	926	215	210	254	247
2)	Missouri	921	215	200	259	247
3)	Wyoming	917	209	190	262	256
4)	Washington	913	215	203	252	243
5)	North Carolina	910	212	202	250	246
	West Virginia	910	211	202	249	248
7)	Tennessee	907	206	205	250	246
8)	Kentucky	904	205	202	251	246
9)	Alabama	903	201	204	246	252
	Virginia	903	206	201	248	248
11)	Arizona	894	203	182	247	243
12)	Louisiana	893	198	203	245	247
	Oregon	893	206	190	256	241
14)	South Carolina	891	204	194	248	245
15)	Georgia	890	205	197	246	242
16)	Arkansas	885	207	190	245	243
	Florida	885	205	190	245	245
	Rhode Island	885	206	189	249	241
19)	Mississippi	874	204	190	241	239
20)	New Mexico	869	197	187	245	240
21)	California	848	191	173	246	238

The most striking thing about this table is that the top eight states in the average rankings did not have a large enough population of students without a high school graduate parent for a statistical break-out. Also, notice the vast distance between Texas and California. With similar student demographics, and similar percentages of students without a high school graduate parent, Texas comes out well on top and California ends up deep in the basement. Is there something about the relationship between schools and parents in Texas that is missing in California?

Teachers' Education & Experience

Common sense would dictate that with poor, inner city schools being less desirable places for teachers to seek employment, the quality of the teaching force would be greater in the affluent suburbs. Numerous studies have tied together the quality of the teacher with the performance of his or her students. The question examined in this chapter is not the effect of the quality of the teacher on test scores, but whether the two criteria upon which we base teacher pay — education and experience — have a positive correlation to test scores.

These table contain only the cumulative test score totals from 1996 and 1998. No state had a sufficient number of K-12 teachers with doctorates for a statistically reliable break-out of scores. In Table TE-1, states are ranked by how much the cumulative test scores increased for teachers who had a masters degree compared to those who only held a bachelors.

Table TE-1. State Rankings: Test Scores of Students by Education of Teacher
(Derived from Table 8.12 and Summary Data Tables, pages 85-90, 57-63 and 34-36 — The Nation's Report Card, 1996 & 1998 State Assessments, US Department of Education, National Center for Education Statistics)

			US	968	986	+18		
	State	*Bachelors*	*Masters*	*Difference*		*State*	*Bachelors*	*Masters*	*Difference*
1)	Maryland	951	986	+35	18)	Connecticut	1012	1020	+8
2)	Massachusetts	990	1013	+23		Texas	977	985	+8
3)	New York	967	987	+20	20)	Tennessee	954	961	+7
	New Mexico	935	955	+20		Georgia	944	951	+7
	DC	831	851	+20		Hawaii	923	930	+7
6)	Wisconsin	998	1017	+19	23)	West Virginia	963	969	+6
7)	Montana	1002	1020	+18		Mississippi	911	917	+6
8)	Rhode Island	962	979	+17	25)	Arkansas	942	946	+4
9)	Maine	1010	1026	+16		Alabama	932	936	+4
10)	Kentucky	958	972	+14		Florida	939	943	+4
11)	Washington	976	989	+13	28)	Utah	983	985	+2
	Arizona	950	963	+13		North Carolina	972	974	+2
	Delaware	946	959	+13		Louisiana	918	920	+2
14)	Oregon	976	988	+12	31)	Minnesota	1006	1007	+1
15)	Colorado	982	992	+10		Virginia	977	978	+1
16)	Missouri	975	984	+9	33)	South Carolina	940	937	-3
	California	929	938	+9	34)	Wyoming	983	973	-10

This table indicates a wide disparity from state to state. While students who had teachers with masters degrees did outscore those who did not, the difference in more than half the states was insignificant. Indeed, in two states, South Carolina and Wyoming, students of teachers with bachelors degrees outperformed those with better educated teachers. This leaves us with a lot of questions, mostly concerning the relationship of those degrees to classroom practices. And on the opposite end, we must ask why Maryland's teachers with Masters got so much more from their students than their less educated counterparts.

A worthy subject for additional research would be to survey those teachers with graduate degrees in the extraordinary states — Maryland, South Carolina and Wyoming for starters — and find out as much as possible about their Masters programs. What did they major in? From where did they get their degree? How much of the coursework was related to the subject matter they teach in school?

Perhaps we should not be encouraging elementary level teachers to get Masters degrees. Pay scales tied to other professional development or academic programs might be more beneficial to both teachers and students. It certainly would be worthwhile to find which graduate programs are producing the best results in the classroom, and then promote those among teachers in various ways.

Since the relationship between teacher education and student test performance is less than obvious, let us see if teacher experience has more of an effect. Although experience would strongly correlate to advanced academic degrees, these statistics are broken down into more categories. We can then differentiate between teachers with some experience, and those with a great deal of experience. What level of experience generates the highest test scores in students? The states are listed in alphabetical order and not ranked.

Table TE-2. Test Scores of Students by Experience of Teacher
(Derived from Table 8.16 and Summary Data Tables, pages 19-24, 17-20 and 13-15 – The Nation's Report Card, 1996 & 1998 State Assessments. US Department of Education, National Center for Education Statistics)

US	**944**	**960**	**977**	**981**	**989**
State	*2 Years Or Less*	*3-5 Years*	*6 -10 Years*	*11-24 Years*	*25 Years Or More*
Alabama	916	943	934	935	938
Arizona	943	951	962	957	953
Arkansas	919	932	956	945	945
California	905	913	921	945	943
Colorado	973	987	983	992	994
Connecticut	1013	1012	1017	1022	1010
Delaware	934	949	932	950	975
DC	--	825	848	840	837
Florida	916	924	940	951	943
Georgia	950	945	942	957	924
Hawaii	908	925	922	935	943
Kentucky	954	963	957	974	978
Louisiana	899	918	913	929	919
Maine	--	1004	1013	1020	1013
Maryland	943	935	955	992	988
Massachusetts	1005	1006	1011	1003	1004
Minnesota	989	995	1007	1015	1008
Mississippi	904	916	917	919	906
Missouri	966	980	990	979	978
Montana	--	1001	1009	1007	1012
New Mexico	914	937	939	954	958
New York	955	965	950	988	1002
North Carolina	961	972	980	970	983
Oregon	--	971	977	987	987
Rhode Island	--	950	969	972	977
South Carolina	920	942	942	943	937
Tennessee	938	937	961	966	951
Texas	955	965	983	986	983
Utah	970	981	981	990	987
Virginia	970	976	972	988	966
Washington	967	973	976	984	982
West Virginia	--	--	965	969	972
Wisconsin	1002	1002	992	1012	1014
Wyoming	--	962	976	986	981

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The U.S. statistics show a steady, substantial climb in test scores as teachers gain experience. But an examination of individual states shows that national averages hide various dips and rises. In fact, New Mexico is the only state that exhibits a steady climb from zero to 25+ years. Oregon, Rhode Island and West Virginia have no reductions in scores, but all three lacked a statistically significant number of new teachers for a break-out score.

In some states, the spread of scores defies logic. In Connecticut, students of teachers with less than two years of experience outscored those of teachers with 3-5 years, and 25 or more years of experience. Maryland showed an eight point drop in scores at the three-year mark. Perhaps most remarkable is Massachusetts, where the failure of teacher applicants on the state's qualifying test made national headlines. The NAEP scores show that students of new teachers outscored the students of Massachusetts teachers with more than 10 years of experience. In a majority of states, scores dipped after the teacher had passed 25 years of experience.

Exclusion Rates

Critics of standardized tests, on either side of the issue, raise another question about their accuracy. Who is tested, and are these students representative of the study body as a whole? From one side comes the criticism that some states, like Texas, New Mexico and California, have large populations of students with Limited English Proficiency (LEP). Other states have large populations of students with Individualized Education Plans (IEP), generally meaning they have been designated as having special needs. These students tend to score lower on standardized tests and so deflate a state or district's scores. From the other side comes the criticism that the schools themselves designate which LEP and IEP students will test and which will not. In high stakes testing, there is a great incentive for administrators to exclude those students who are likely to reduce the school's overall scores. The U.S. Department of Education encourages schools to test as many students as possible on the NAEP to get the broadest possible picture. However, we cannot be certain that schools are testing all the students they can realistically test, nor do we know if the LEP and IEP students who are tested are representative of their peers or the cream of the crop.

The special education exclusion rates also have ramifications for the minority scores as well as for scoring disparities from district to district. A study of 10 Georgia middle school systems showed black students were more likely to be placed in special education programs.[1] The New Jersey Department of Education released a report that showed some district with 10 times more students in special education than other districts. Lack of consistency in diagnosis of learning disabilities, along with financial incentives to designate, or not designate, a student as learning disabled, leads to wide disparities. "We've stopped the wholesale referral of kids," said Wallington Superintendent Frank Cocchiola. "If you don't have intervening steps, you wind up sending anyone to the child study team."[2]

Let's see if we can better quantify how the exclusion rate affects NAEP scores. For this chapter, we find ourselves with tables that are the inverse of the previous ones. Analysis and state rankings of the test scores of IEP and LEP students would have little value, since the ones who tested represented only a portion (which portion, we don't know) of the total IEP and LEP population. For the same reason, a simple listing of exclusion rates would not account for those IEP and LEP students who did test. Instead, Table E-1 ranks states by the scores of students who are *not* LEP. Table E-2 ranks states by the scores of students who do *not* have IEPs.

Table E-1. State Rankings: Test Scores of Non-LEP Students
(from Summary Data Tables, pages 43-48, 57-64, 73-82 and 25-27 –
The Nation's Report Card, 1996 & 1998 State Assessments,
US Department of Education, National Center for Education Statistics)

	State	Cumulative Score	Grade 4 Math	Grade 4 Reading	Grade 8 Math	Grade 8 Reading
	US	**976**	**225**	**216**	**273**	**262**
1)	Connecticut	1017	233	232	280	272
2)	Maine	1015	232	226	284	273
3)	Minnesota	1008	233	223	284	268
4)	Montana	1007	228	226	283	270
5)	Wisconsin	1006	232	225	283	266
6)	Massachusetts	1002	229	226	278	269
7)	Colorado	989	226	223	276	264
8)	Washington	987	226	218	277	266
9)	Texas	986	231	219	272	264
	Utah	986	227	217	277	265
11)	Oregon	984	224	216	277	267
12)	New York	979	224	217	271	267
	Virginia	979	223	219	270	267
	Wyoming	979	223	219	275	262
15)	Missouri	978	225	217	273	263
16)	Rhode Island	975	222	220	270	263
17)	North Carolina	974	225	217	268	264
18)	Maryland	968	221	215	270	262
19)	Kentucky	967	220	218	267	262
20)	West Virginia	966	223	216	265	262
21)	Arizona	964	220	211	270	263
22)	Tennessee	954	219	213	263	259
23)	Delaware	950	215	212	267	256
24)	New Mexico	949	215	211	263	260
25)	California	945	213	208	266	258
	Georgia	945	216	210	262	257
27)	Arkansas	943	216	209	262	256
	Florida	943	217	208	264	254
29)	South Carolina	940	213	211	261	255
30)	Alabama	935	212	211	257	255
31)	Hawaii	931	216	202	263	250
32)	Louisiana	917	209	204	252	252
33)	Mississippi	913	208	204	250	251
34)	DC	840	187	183	233	237

Only California picked up significant ground in this formulation, vaulting it past a handful of southern states. California's LEP scores *have* been holding down its average, though this does not adequately explain its ranking relative to Texas, New Mexico and Arizona. The next set of test scores will be most interesting, as the state has virtually done away with bilingual education.

Table F-2. State Rankings: Test Scores of Non-IEP Students
(from Summary Data Tables, pages 37-42, 49-56, 63-72 and 22-24 —
The Nation's Report Card, 1996 & 1998 State Assessments,
US Department of Education, National Center for Education Statistics)

	US	**982**	**226**	**218**	**274**	**264**
	State	*Cumulative Score*	*Grade 4 Math*	*Grade 4 Reading*	*Grade 8 Math*	*Grade 8 Reading*
1)	Maine	1022	234	227	286	275
2)	Connecticut	1020	233	233	281	273
3)	Minnesota	1017	234	226	286	271
4)	Montana	1016	229	228	286	273
5)	Massachusetts	1012	231	229	280	272
6)	Wisconsin	1010	232	226	284	268
7)	Colorado	995	227	224	278	266
8)	Utah	994	229	219	279	267
	Washington	994	227	221	279	267
10)	Oregon	993	226	219	279	269
11)	Wyoming	992	226	223	278	265
12)	Texas	986	230	219	272	265
13)	Missouri	985	227	218	275	265
14)	Virginia	983	224	220	271	268
15)	New York	981	224	217	272	268
	Rhode Island	981	222	221	272	266
17)	North Carolina	978	226	218	269	265
18)	Maryland	975	222	216	272	265
19)	Kentucky	973	222	219	268	264
20)	West Virginia	966	224	218	260	264
21)	Delaware	964	220	216	269	259
	Tennessee	964	221	216	265	262
23)	Arizona	953	218	208	269	263
24)	Arkansas	952	217	212	264	259
25)	Florida	950	217	211	265	257
	Georgia	950	217	211	263	259
27)	New Mexico	948	215	209	264	260
28)	South Carolina	947	215	212	263	257
29)	Alabama	942	213	213	259	257
30)	Hawaii	937	216	203	265	253
31)	California	933	210	203	265	255
32)	Louisiana	920	209	205	253	253
33)	Mississippi	919	209	206	251	253
34)	DC	839	187	182	233	237

The non-IEP scores are almost identical to the average rankings, indicating that the scores of IEP students who took the tests (representing about 6% of the test-taking population) had about the same effect across all states. Not a single state changed more than two spots. This would suggest that manipulation of the test-taking population could have an effect on raw scores, but it would be very difficult to influence ranking that way.

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[1] "Data: Black students less likely to be placed in gifted classes," Associated Press, March 1, 1999.

[2] David Glovin, "Location is key in path to special ed," *The Record* (Bergen County, New Jersey), March 11, 1999.

Spending

There is one other factor that is supposed to positively affect student outcomes in public education, and that is spending. EIA's March 1998 report, *One Yard Below: Education Statistics from a Different Angle*, examined many aspects of education spending. Almost everything in that report dealt with inputs. Since this report deals with outputs, at least in terms of test scores, it contains almost nothing about money. However, *Measure for Measure* will make this one attempt to tie inputs to outputs.

Each state's cumulative NAEP math and reading scores have been taken from Table 5 in the introduction. Next to it is each state's per-pupil spending, based on current expenditures and average daily attendance. Since the test scores are from school years 1995-96 and 1997-98, EIA used per-pupil spending for the year in between, 1996-97.

Simply dividing spending by points would give too much weight to spending. Table S-1 uses a formula that's not too difficult to understand. In order for scores and spending to have relatively equal weight in the calculation, the number of points above the national average in test scores (inside parentheses) is added to the amount below the national average in spending (also inside parentheses) expressed as a percentage of the national average for 1996-1997: $6,327. Negative numbers in parentheses simply mean the state was that much below the national average (for scores) or above the national average (for spending). Therefore the highest "bang for the buck" would go to the state with the highest score for the least amount of money.

Table S-1. State Rankings: Test Score "Bang for the Buck"
(from Summary Data Tables — The Nation's Report Card, 1996 & 1998 State Assessments, US Department of Education, National Center for Education Statistics) and Table 11 (from Estimated Expenditures for Public Schools, 1996-97 by the National Education Association, March 1998)

	US	**969**	**0**	**$6,327**	**0**	**0**
	State	*Cumulative NAEP Scores*	*Scoring Variation*	*Per-Pupil Spending*	*Spending Variation*	*"Bang for the Buck"*
1)	Utah	984	+15	$4,086	+35	+50
2)	Montana	1007	+38	$5,973	+6	+44
3)	Maine	1014	+45	$6,712	-6	+39
4)	Minnesota	1005	+36	$6,401	-1	+35
5)	Colorado	988	+19	$5,550	+12	+31
6)	Missouri	977	+8	$5,370	+15	+23
7)	North Carolina	973	+4	$5,247	+17	+21
8)	Wisconsin	1004	+35	$7,369	-16	+19
9)	Washington	983	+14	$6,223	+2	+16
	Arizona	954	-15	$4,387	+31	+16
11)	Connecticut	1016	+47	$8,376	-32	+15
	Texas	978	+9	$5,935	+6	+15
13)	Massachusetts	1001	+32	$7,628	-21	+11
	Wyoming	979	+10	$6,293	+1	+11
15)	Virginia	977	+8	$6,370	-1	+7
16)	Oregon	979	+10	$6,590	-4	+6
17)	Arkansas	943	-26	$4,498	+29	+3
18)	Tennessee	953	-16	$5,272	+17	+1
19)	Kentucky	967	-2	$6,229	+2	0
20)	Alabama	935	-34	$4,737	+25	-9
21)	Maryland	968	-1	$7,052	-11	-12
22)	West Virginia	966	-3	$7,036	-11	-14
23)	South Carolina	939	-30	$5,347	+15	-15
24)	Georgia	944	-25	$6,030	+5	-20
25)	New Mexico	940	-29	$5,900	+7	-22
26)	Rhode Island	969	0	$7,876	-24	-24
27)	Florida	940	-29	$6,049	+4	-25
28)	California	927	-42	$5,327	+16	-26
29)	Mississippi	913	-56	$4,581	+28	-28
30)	Louisiana	917	-52	$4,876	+23	-29
31)	Hawaii	927	-42	$6,211	+2	-40
32)	Delaware	950	-19	$7,690	-22	-41
33)	New York	975	+6	$9,702	-53	-47
34)	DC	838	-131	$8,167	-29	-160

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The advantage to such a table is that it penalizes states that spend a lot of money to get only marginally better results. But you don't get credit for being cheap at the expense of student achievement.

Note that many of the high-scoring states remain near the top of the rankings. But the "bang for the buck" table gives more credit to states like Utah, Colorado, Missouri and North Carolina, whose students get test scores above the national average for a fraction of the costs of some other states. And states like Delaware fall far in the rankings because they spend more than the national average for results that fall below the national average.

Such a measurement could also be applied to the other tables in the report, in order to see which state gets the most "bang for the buck" for minority students, or students in Title I, or students with new teachers. Comparisons within states are also possible, using statewide standardized tests and per-pupil spending from district to district. It is well past time to analyze the relationships between inputs and outputs in public education.

Conclusion

Other factors that affect standardized test scores are not so easy to quantify or examine. One of these is the problem of transient students. Students who move frequently are believed to score lower than students with residential stability. Also, schools, districts and states are judged on test scores received by students who may have arrived at the school a week prior to the test. States with large populations of people on active duty military service would tend to have a larger number of transient students. What isn't known is whether the transient population is large enough anywhere to have an effect on a state's overall test scores.

A second problem is one that teachers talk about very frequently, but which receives hardly any attention outside the classroom. There is a growing population of students who, for one reason or another, refuse to take standardized tests seriously. Teachers and test scorers can regale you with stories of students who fill in the bubbles on their answer sheets at random, or connect the bubbles to create a design. Test-taking is pressure-filled and difficult for the best of us. Some rise to the challenge, others surrender, giving us a somewhat less accurate picture of their abilities.

A third problem is one that has received more press attention lately: cheating — and not necessarily cheating by students. EIA uncovered cheating incidents by teachers and administrators in nearly two dozen states in 1998 alone. Demands for greater accountability are likely to lead to more cheating. The public must be sure that the people who run our public school systems are held to high standards of integrity first, even before we hold them to high standards of academic performance.

A final problem with standardized tests is that they are, well, standardized. In order to ensure that the tests are scored exactly the same from state to state, and are cheap to produce and score, most testing companies rely on the multiple-choice, bubble-sheet, machine-scored tests. A large number of critics believe these tests give us a distorted picture of American public education. Even those who support the tests are concerned about the lack of measurement of writing skills. They would like to see open-ended and essay questions incorporated into standardized tests.

We can all agree that machine-scanned tests are limited in scope, but past attempts to remedy the situation do not inspire optimism. Case in point: the now-defunct California Learning Assessment System (CLAS). Established with bipartisan support in the state legislature, the CLAS tests were an attempt to improve on the multiple-choice tests. After three years and tens of millions of dollars, CLAS was abandoned after widespread public protest about fuzziness, political

correctness, lack of standardization in scoring, and misuse of funds. A major drawback was that the open-ended tests were scored by part-timers, under significant time constraints, with a minimum amount of training on the rubric. The CLAS experience in California is not unique. The problem exists at all levels of evaluation, from the Education Testing Service, to the National Board of Professional Teaching Standards, all the way down to state level exams, like CLAS or New Jersey's Early Warning Test.

How much we should rely on standardized tests to determine public education policy is an ongoing battle. It is important to acknowledge that who a student is and where he or she comes from can be as important, if not more so, than what happens to him or her at school. However, we must treat these factors as obstacles to be overcome, not alibis to be delivered whenever test scores are bad. *Measure for Measure* provides a new set of rankings to allow us to better judge which states are overcoming obstacles, and which states are delivering alibis.

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Since June 1997, Mike has produced the *EIA Communiqué*, a weekly e-mail bulletin of inside news and information about public education and the teachers' unions. The communiqué is available to anyone, free of charge, by sending a request to EducIntel@aol.com.

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